Udel® P-3703
polysulfone

Udel® P-3703 is a high-flow grade of polysulfone intended for injection molding applications with thin walls or long flow lengths. This grade has higher flow than Udel® P-1700 and a slightly greater tendency to stress crack in some aggressive environments.

Udel® polysulfone is a tough, rigid, high-strength thermoplastic that maintains its properties at temperatures from -101°C to 149°C (-150°F to 300°F). The heat deflection temperature at 1.8 MPa (264 psi) is 174°C (345°F). For most purposes, this resin is suitable for continuous use up to 149°C (300°F). The material is resistant to oxidation and hydrolysis and withstands prolonged exposure to high temperatures and repeated sterilization. Udel polysulfone is highly resistant to mineral acids, alkali and salt solutions. The resistance to detergents and hydrocarbon oils is good, but it will be attacked by polar solvents such as ketones, chlorinated hydrocarbons and aromatic hydrocarbons.

Electrical properties of Udel polysulfone are stable over a wide temperature range and after immersion in water or exposure to high humidity.

- Natural: Udel® P-3703 NT 11

General		
Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• Latin America • North America
Features	• Acid Resistant • Alcohol Resistant • Alkali Resistant • Chemical Resistant • Food Contact Acceptable	• Good Toughness • High Flow • High Heat Resistance • Hydrocarbon Resistant • Hydrolytically Stable
Uses	• Appliance Components • Appliances • Automotive Electronics • Batteries • Business Equipment • Electrical Parts • Electrical/Electronic Applications	• Food Service Applications • Industrial Parts • Microwave Cookware • Piping • Plumbing Parts • Valves/Valve Parts
Agency Ratings	• ISO 10993	• NSF STD-51[1]
RoHS Compliance	• RoHS Compliant	
Appearance	• Clear/Transparent	
Forms	• Pellets	
Processing Method	• Extrusion	• Injection Molding

Physical	Typical Value	Unit	Test method
Density / Specific Gravity	1.24		ASTM D792
Melt Mass-Flow Rate (MFR) (343°C/2.16 kg)	17	g/10 min	ASTM D1238
Molding Shrinkage - Flow	0.70	%	ASTM D955
Water Absorption (24 hr)	0.30	%	ASTM D570

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Mechanical	Typical Value	Unit	Test method
Tensile Modulus	2480	MPa	ASTM D638
Tensile Strength (Yield)	70.3	MPa	ASTM D638
Tensile Elongation			ASTM D638
Yield	5.5	%	
Break	50 to 100	%	
Flexural Modulus	2690	MPa	ASTM D790
Flexural Strength	106	MPa	ASTM D790

Impact	Typical Value	Unit	Test method
Notched Izod Impact	69	J/m	ASTM D256
Tensile Impact Strength	420	kJ/m²	ASTM D1822

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	174	°C	
CLTE			ASTM D696
Flow	5.7E-5	cm/cm/°C	
Transverse	5.7E-5	cm/cm/°C	

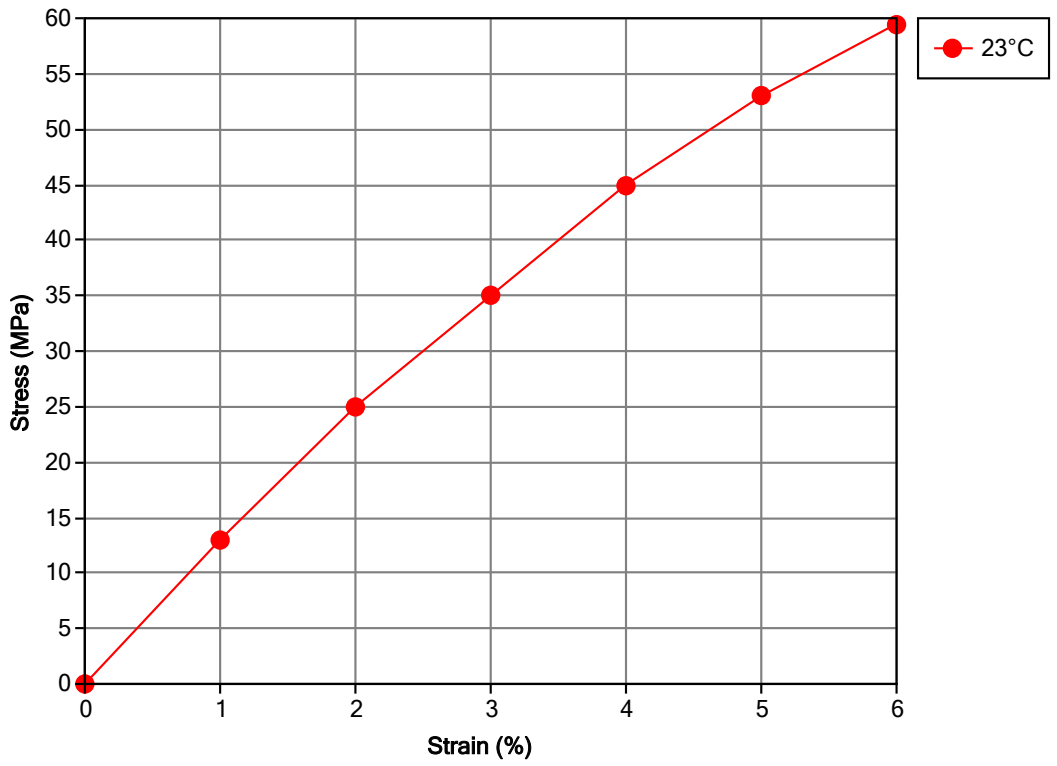
Electrical	Typical Value	Unit	Test method
Volume Resistivity	5.0E+16	ohms·cm	ASTM D257
Dielectric Strength	17	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
60 Hz	3.03		
1 kHz	3.04		
1 MHz	3.02		
Dissipation Factor			ASTM D150
60 Hz	1.1E-3		
1 kHz	1.3E-3		
1 MHz	5.0E-3		

Flammability	Typical Value	Unit	Test method
Flame Rating			UL 94
1.5 to 3.0 mm, NC	HB		
6.0 mm, NC	V-0		

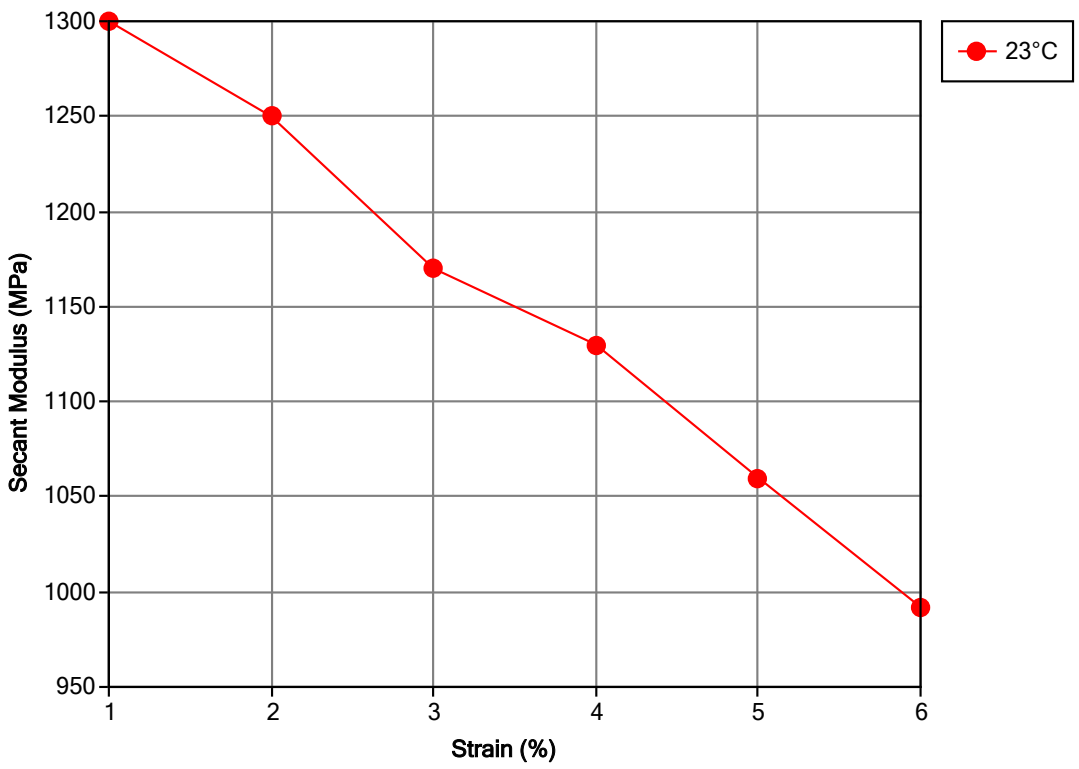
Injection	Typical Value	Unit
Drying Temperature - Desiccant Dryer	135 to 163	°C
Drying Time - Desiccant Dryer	2.0 to 4.0	hr
Suggested Max Moisture	< 0.050	%
Processing (Melt) Temp	350 to 380	°C
Mold Temperature	138 to 160	°C
Injection Rate	Slow-Moderate	
Back Pressure	1.50 to 3.00	MPa
Screw Compression Ratio	1.8:1.0 to 2.6:1.0	

Extrusion	Typical Value	Unit
Drying Temperature	135 to 163	°C
Drying Time	4.0 to 8.0	hr
Suggested Max Moisture	< 0.010	%
Melt Temperature	315 to 370	°C

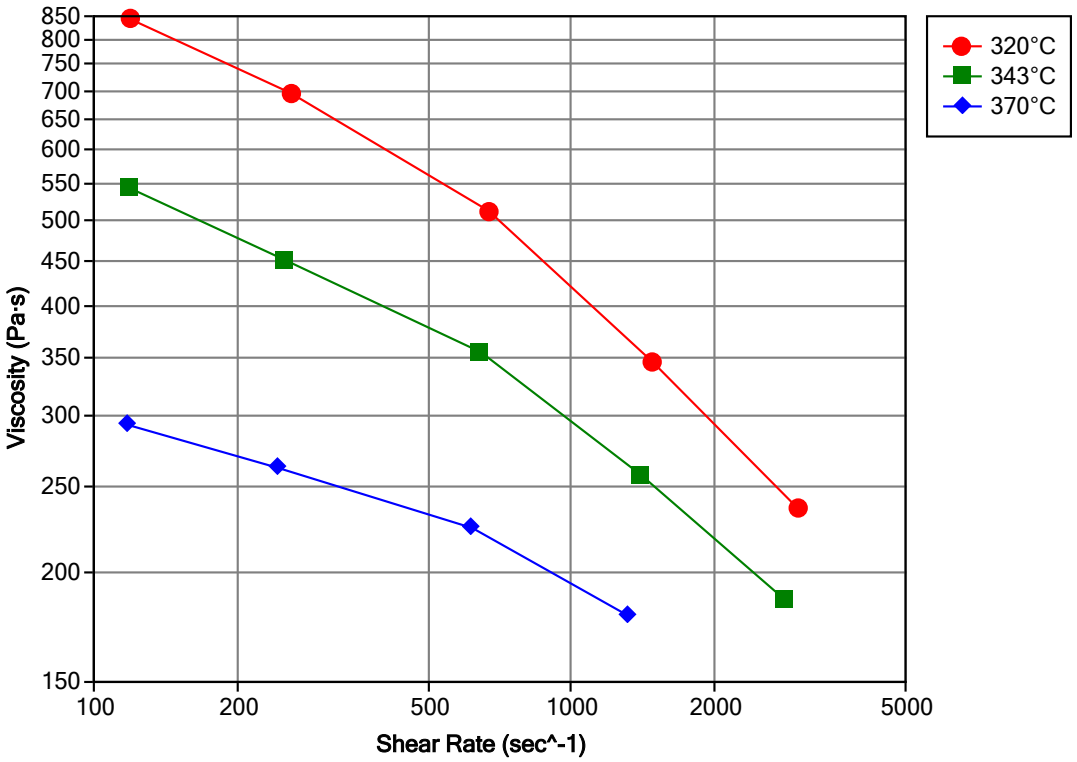
Isothermal Stress vs. Strain (ISO 11403)



Secant Modulus vs. Strain (ISO 11403)



Viscosity vs. Shear Rate (ISO 11403)



Notes

Typical properties: these are not to be construed as specifications.

[1] Maximum Temperature of Use: 149°C (300°F)

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